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(56) Documents Cited

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INT CL<sup>6</sup> B60N 2/00 2/24 , B60P 1/00 1/64 9/00 , B62D  
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(54) Abstract Title

**A method and apparatus for extending the goods carrying floor space in a vehicle**

(57) A method for extending the goods carrying floor space (2) into a drivers area (3) and the front passenger area (4) of a vehicle (1), for example, a van or jeep, comprises placing a floor supporting framework (8) in the drivers area (3) and the front passenger area (4) and placing an extension floor (7) on the floor supporting framework (8). The driver's and passenger seats (5,6) are mounted on carriers (19) which are slidably carried on the floor supporting framework (8). A pair of anchor brackets (26) secured to the floor supporting framework (8) carry seatbelt receivers (25) for the driver and passenger seatbelts. The floor supporting framework (8) is secured to seat anchoring locations (16) on the floor (11) of the vehicle (1) by floor engaging supports (15) which extend from the floor supporting framework (8).

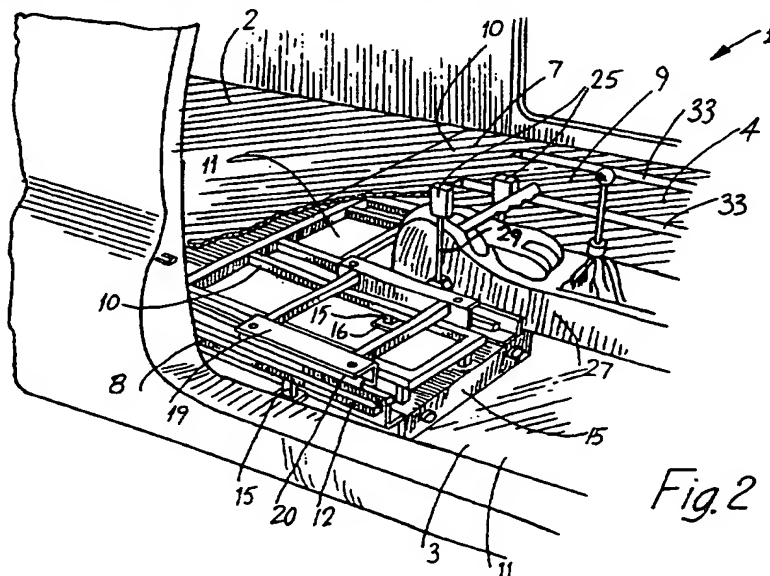
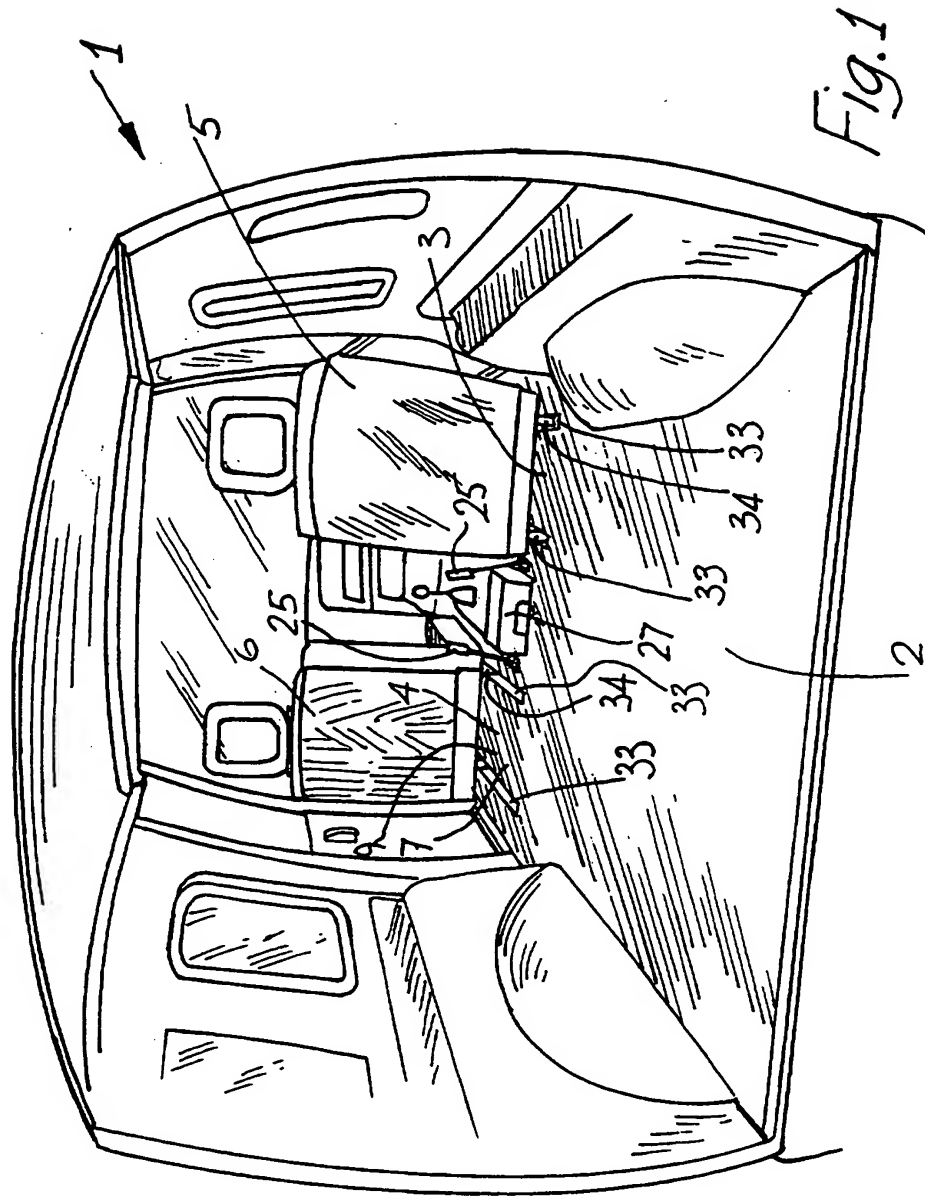


Fig.2

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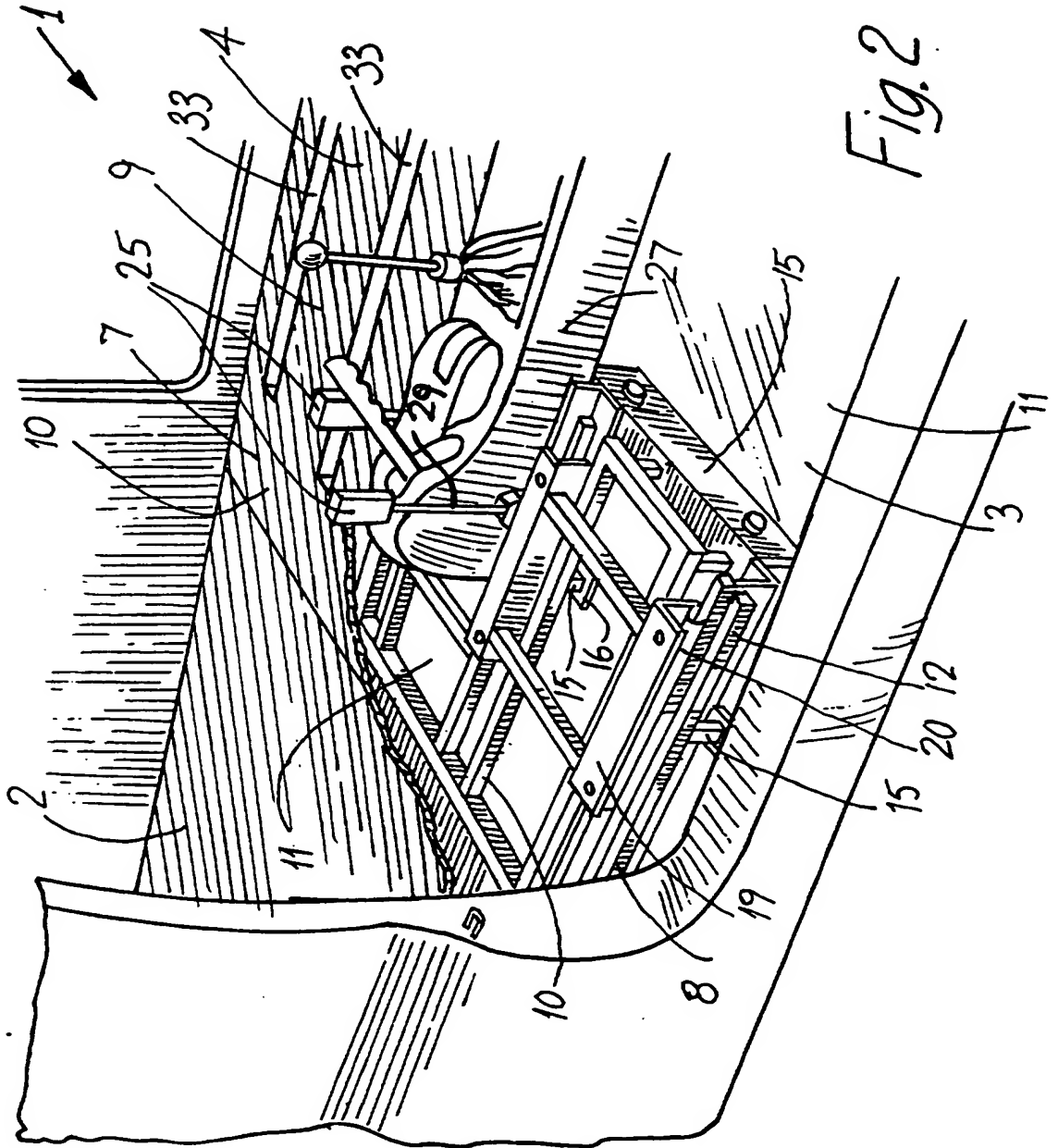
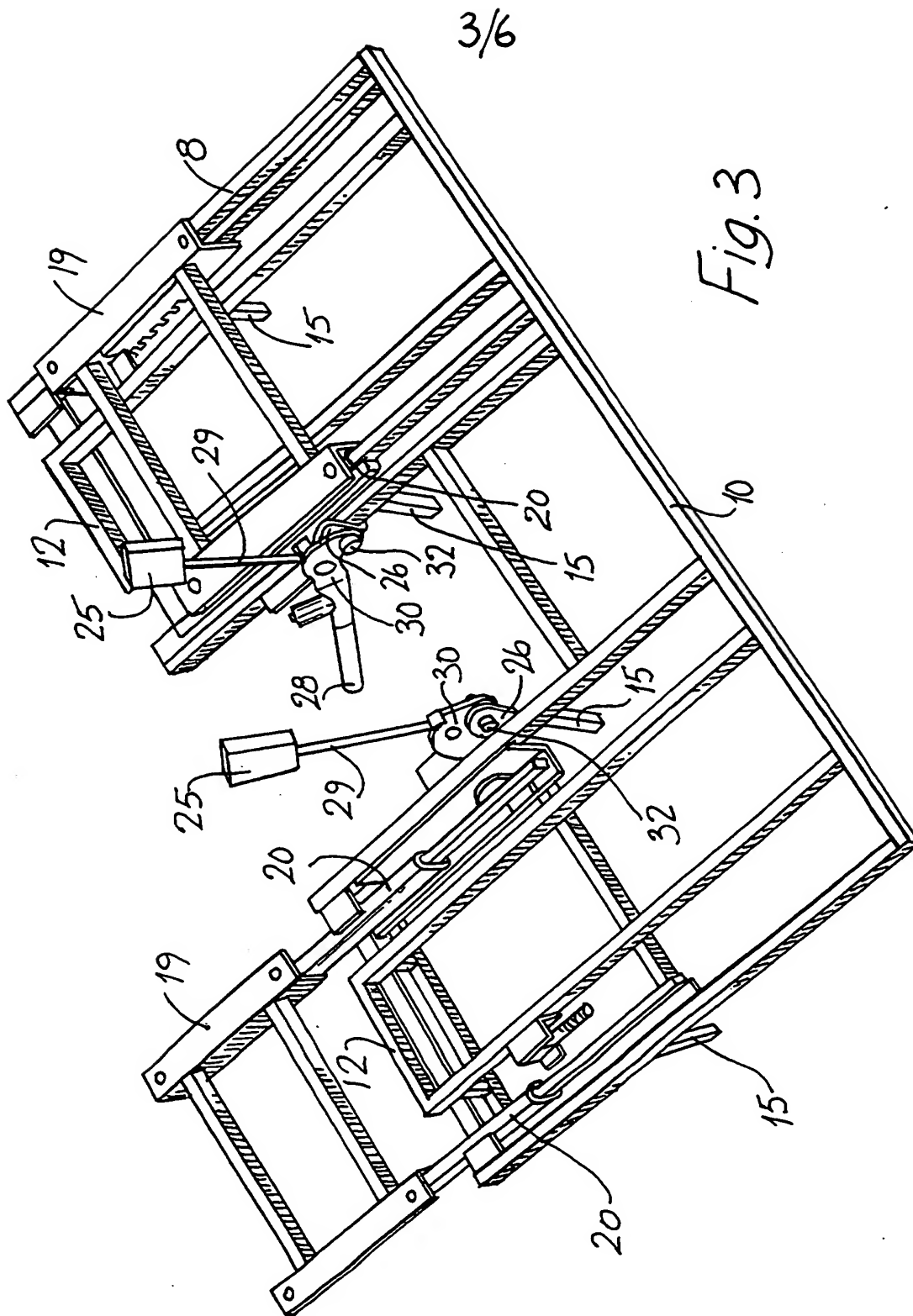
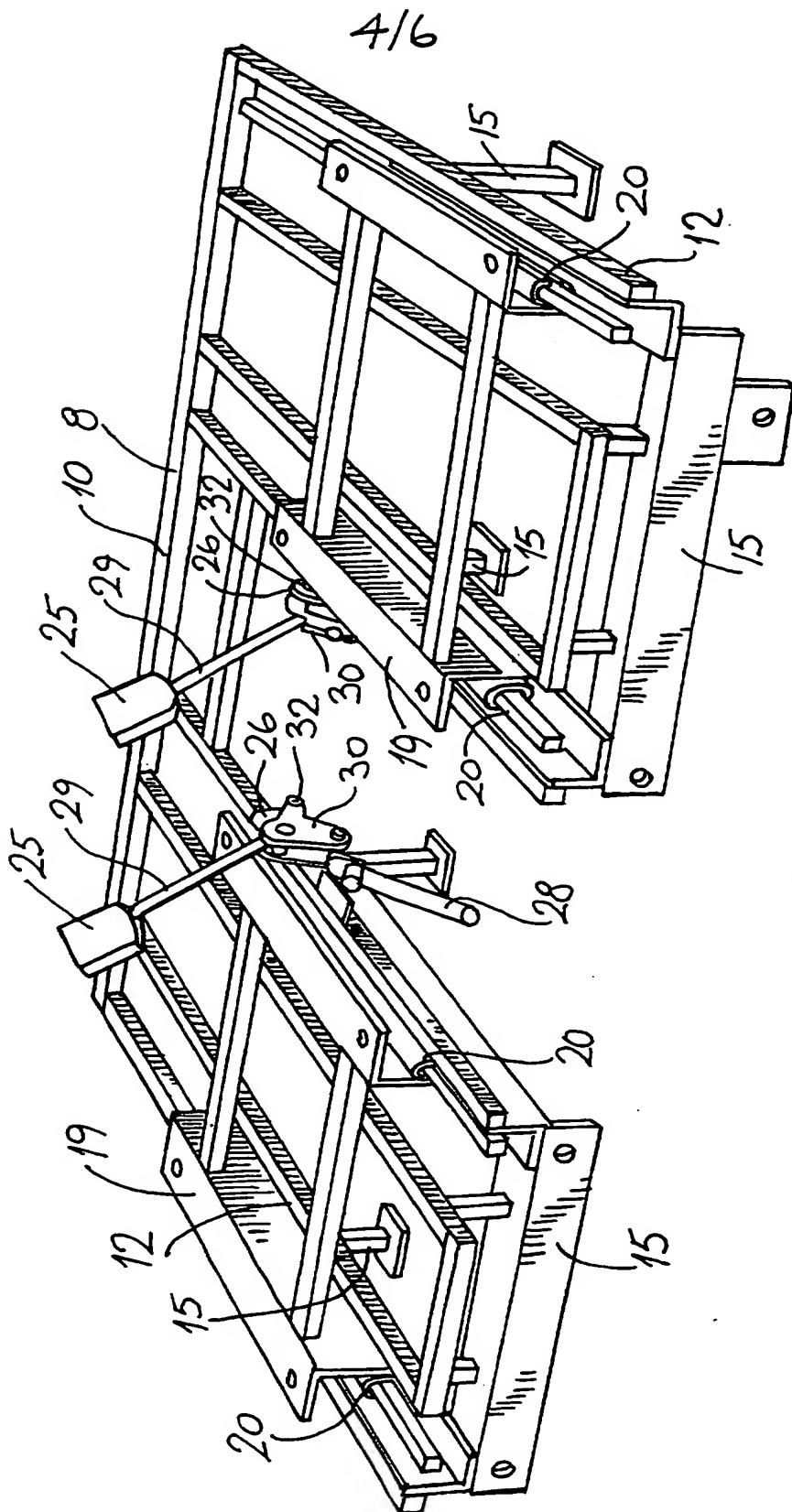


Fig. 2





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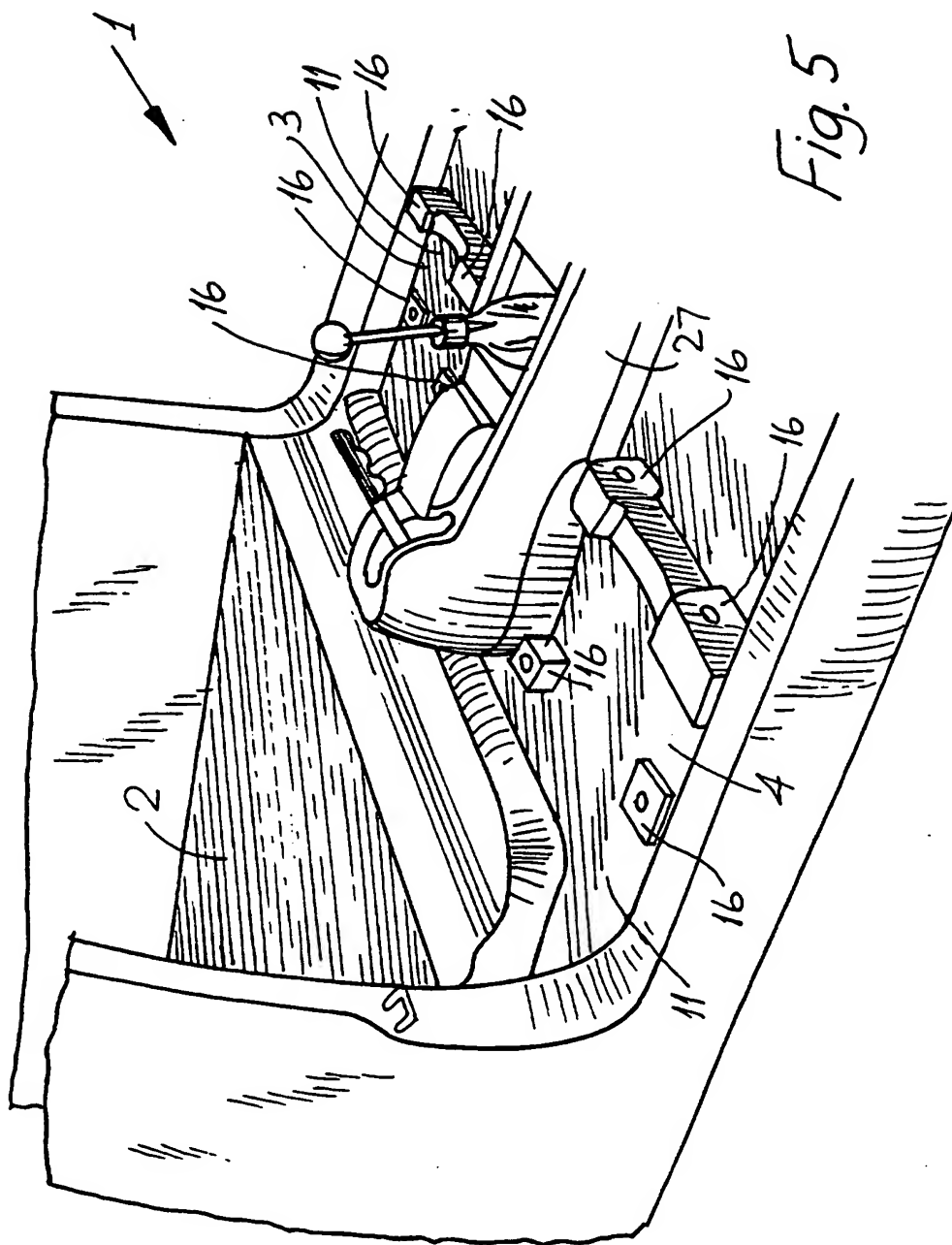


Fig. 5

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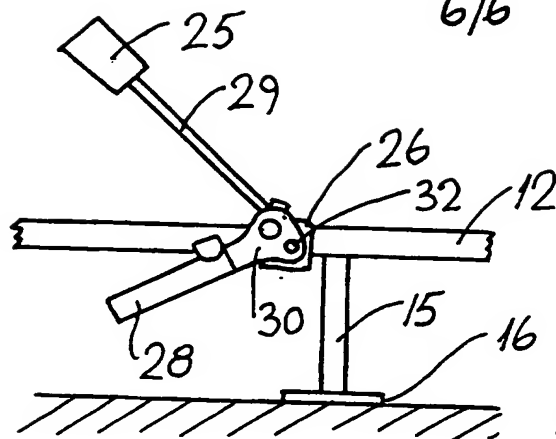


Fig. 7

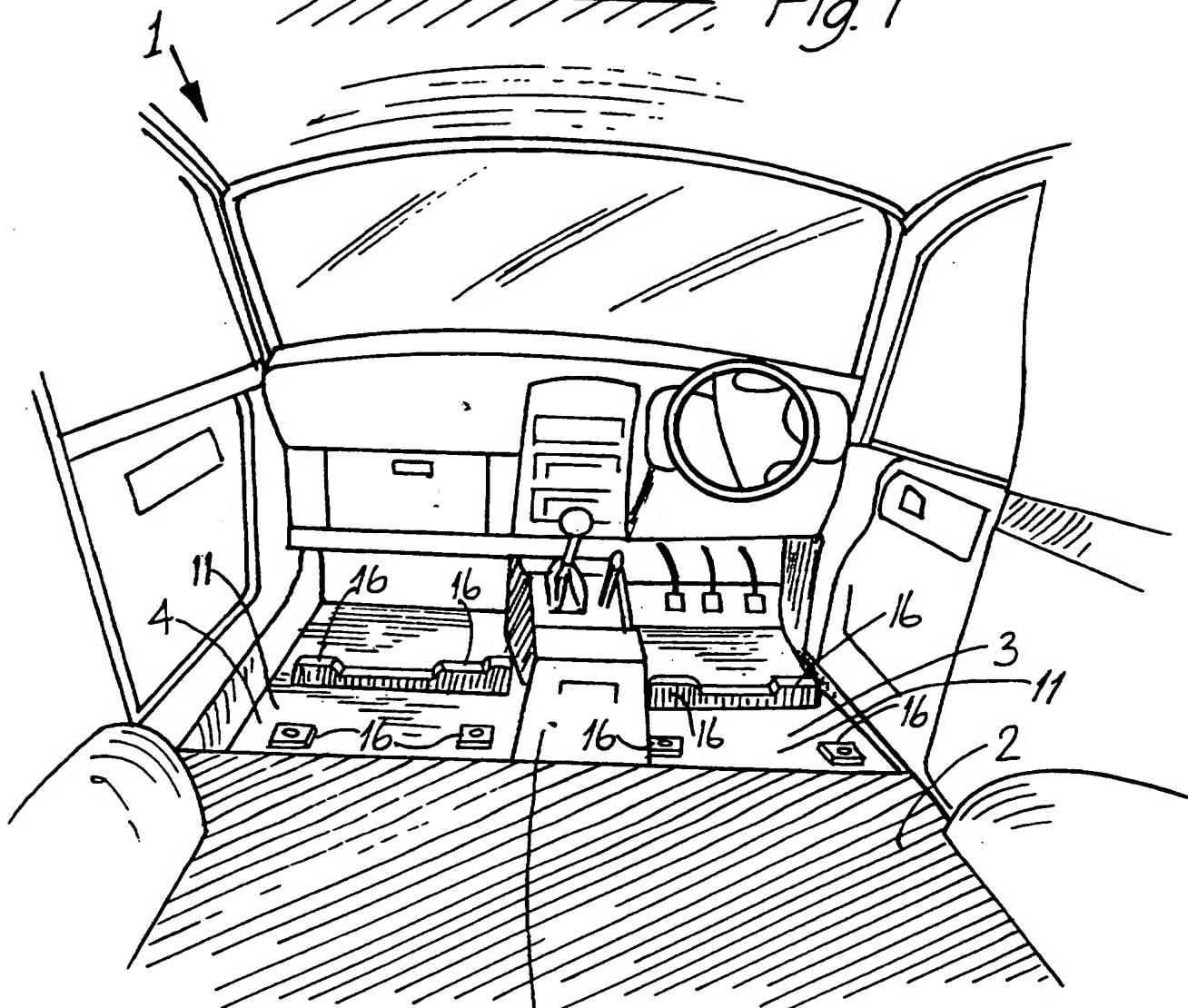


Fig. 6

"A method and a floor supporting framework for extending the goods carrying floor space in a vehicle"

The present invention relates to a method for extending the goods carrying floor space of a vehicle, and in particular, for extending the goods carrying floor space of a jeep, an estate type vehicle or a van. The invention also relates to a floor supporting framework for extending the goods carrying floor space of such a vehicle.

10 According to the invention there is provided a method for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the vehicle, the method comprising the steps of removing the drivers  
15 seat from the drivers area, locating a floor supporting framework in the drivers area for supporting an extension floor extending from the goods carrying floor, providing a mounting means on the floor supporting framework for securing the drivers seat to  
20 the floor supporting framework, providing an anchoring means on the floor supporting framework for anchoring a seatbelt receiver to the floor supporting framework for the drivers seat seatbelt, and placing an extension floor panel on the floor supporting framework to form  
25 the extension floor.



In one embodiment of the invention the floor supporting framework is located in both the drivers area and a front passenger area, and both the drivers seats and the front passenger seat are removed prior to locating  
5 the floor supporting framework in the vehicle.

Preferably, an anchoring means is provided on the floor supporting framework for anchoring each seatbelt receiver to the floor supporting framework.

Advantageously, each anchoring means is located on the  
10 floor supporting framework adjacent a side of the corresponding seat which is adjacent the central tunnel of the vehicle.

In one embodiment of the invention each anchoring means comprises an anchoring bracket mounted on the floor  
15 supporting framework.

Preferably, each anchoring means carries the seatbelt receiver on a carrier cable, and a retracting mechanism is provided for retracting the carrier cable and the seatbelt receiver for in turn returning an individual  
20 sitting in the corresponding seat to the seat.

Preferably, an impact monitoring means is mounted in the vehicle, and the retracting mechanism of the

) seatbelt receiver is responsive to the monitoring means for retracting the carrier cable and the seatbelt receiver in the event of an accident. Ideally, the impact monitoring means is mounted on the central  
5 tunnel of the vehicle.

In one embodiment of the invention the impact monitoring mean is an inertia switch.

In one embodiment of the invention a floor engaging support means extends downwardly from the floor  
10 supporting framework for securing the floor supporting framework to a corresponding anchoring location on the floor of the vehicle, the anchoring locations being provided for anchoring the corresponding seat to the floor of the vehicle.

15 In another embodiment of the invention each mounting means is provided by a seat carrier for slidably carrying and supporting the corresponding seat on the floor supporting framework for facilitating forward and rearward adjustment of the position of the  
20 corresponding seat. Preferably, the seat carrier is slidably carried on a pair of spaced apart telescoping rails.

Additionally, the invention provides a floor supporting

fram work for supporting an extension floor for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the vehicle, the floor

5 supporting framework comprising a mounting means for securing the drivers seat to the floor supporting framework, and an anchoring means for anchoring a seatbelt receiver to the floor supporting framework for the drivers seat seatbelt.

10 In one embodiment of the invention the floor supporting framework is adapted for extending into the drivers area and a front passenger area of the vehicle, and a pair of mounting means are provided on the floor supporting framework for mounting the drivers seat and  
15 the front passenger seat thereon. Preferably, a pair of anchoring means are provided for anchoring the seat belt receivers of the respective seat belts of the drivers and front passenger seats to the floor supporting framework.

20 In another embodiment of the invention the anchoring means comprises a means for carrying a carrier cable which carries the seatbelt receiver, the carrier cable being connected to a retracting mechanism for retracting the carrier cable and in turn the seatbelt  
25 r c iver for returning an individual in the seat into

the seat. Preferably, the retracting mechanism is responsive to an impact monitoring means located in the vehicle for causing the retracting mechanism to retract the seatbelt receiver on an impact. Advantageously, 5 the impact monitoring means is provided by an inertia switch, and the inertia switch is mounted on the central tunnel of the vehicle.

Preferably, each anchoring means is mounted on the floor supporting framework at a location adjacent a 10 side of the corresponding seat, which in use is adjacent the central tunnel of the vehicle.

In one embodiment of the invention a floor engaging support means extends downwardly from the floor supporting framework for engaging and securing the 15 floor supporting framework to a corresponding anchoring location on the floor of the vehicle which is provided for anchoring a corresponding seat to the vehicle floor.

In another embodiment of the invention each mounting 20 means for mounting the corresponding seat to the floor supporting framework slidably mounts the corresponding seat to the supporting framework for facilitating forward and rearward adjustment of the position of the corresponding seat. Preferably, each mounting means

compris s a seat carrier which is slidably carried on the floor supporting framework. Advantageously, each seat carrier is slidably carried on the floor supporting framework by a pair of spaced apart  
5 telescoping rails.

In one embodiment of the invention the extension floor is mounted on the floor supporting framework.

Further the invention provides a vehicle, for example, a jeep, an estate vehicle or a van in which the goods  
10 carrying floor space of the vehicle is extended into at least the drivers area of the vehicle by the method according to the invention, and preferably, the goods carrying floor space of the vehicle is extended using the floor supporting framework also according to the  
15 invention.

The invention will be more clearly understood from the following description of a preferred embodiment thereof which is given by way of example only with reference to the accompanying drawings, in which:

20 Fig. 1 is a rear view of a vehicle according to the invention in which the goods carrying floor space to the rear of the vehicle has been extended into the drivers area and front passenger area

using a method according to the invention,

Fig. 2 is a cut-away perspective view of a portion of the vehicle of Fig. 1,

Fig. 3 is a perspective view of a framework for  
5 use in the method for extending the goods carrying floor space for use in the method according to the invention,

Fig. 4 is another perspective view of the framework of Fig. 3,

10 Fig. 5 is a perspective view of a portion of the vehicle during extension of the goods carrying floor space of the vehicle,

Fig. 6 is a rear perspective view of the vehicle, also during extension of the goods carrying floor  
15 space of the vehicle, and

Fig. 7 is a side elevational view of a portion of the vehicle in which the goods carrying floor space has been extended.

Referring to the drawings there is illustrated a  
20 vehicle according to the invention which is indicated

generally by the reference numeral 1. In this embodiment of the invention the vehicle 1 is a jeep in which a goods carrying floor space 2 to the rear has been extended into a drivers area 3 and a front passenger area 4 of the vehicle beneath a drivers seat 5 and a front passengers seat 6, respectively, by an extension floor 7, using a method according to the invention. The extension floor 7 comprises a floor supporting framework 8 also according to the invention of box section steel which is located and secured as will be described below in the drivers and front passenger areas 3 and 4. A floor panel 9 which forms the extension floor is secured to the floor supporting framework 8. The floor supporting framework 8 comprises a rear portion 10 which extends across the floor 11 of the vehicle 1 adjacent the goods carrying space 2. A pair of front portions 12 extend forwardly from the rear portion 10 into the drivers area 3 and the front passenger area 4, respectively. Floor engaging support means which comprise downwardly extending floor engaging supports 15 of box section steel extend downwardly from the front portions 12 of the floor supporting framework 8 for engaging corresponding seat anchoring locations 16 on the floor 11 of the vehicle 1 in the drivers and passenger areas 3 and 4, respectively. The floor engaging supports 15 are adapted for engaging the seat anchoring locations

16 and for being secured thereto in similar fashion to that by which the driver and passenger seats 5 and 6, respectively, are originally anchored. Such mounting arrangements for mounting the driver and passenger  
5 seats onto the floor of such a vehicle 1 will be well known to those skilled in the art.

A pair of mounting means for mounting the driver and passenger seats 5 and 6 to the floor supporting framework 8 comprises a pair of seat carriers 19 onto  
10 which the respective driver and passenger seats 5 and 6 are secured. The seat carriers 19 are slidably carried on the floor supporting framework 8 on telescoping slidable rails 20. A pair of spaced apart rails 20 are provided for each seat carrier 19. The seat carriers  
15 19 are welded to one of the rails of each of the telescoping rails 20, while the others of the rails of each of the telescoping rails 20 are welded to the floor supporting framework 8. The mounting of the seat carriers 19 on the telescoping rails 20 facilitates  
20 forward and rearward adjustment of the driver and passenger seats 5 and 6.

A locking mechanism (not shown) for locking the seat carriers 19 at a desired position is also provided for each seat, and each locking mechanism is operable by a  
25 corresponding lever (not shown) which is pivotally



carried on the floor supporting framework 8. The lever (not shown) of each seat carrier 19 is located on the outer side of the floor supporting framework 8 corresponding to the seat.

5 A pair of anchoring means for anchoring the seatbelt receivers 25 for the driver and passenger seats 5 and 6 comprises a pair of anchor brackets 26 which are secured to the floor supporting framework 8. The anchor brackets 26 are located on the floor supporting  
10 framework 8 adjacent the inner side of the corresponding seats 5 or 6 which is adjacent a central tunnel 27 of the vehicle 1. In this embodiment of the invention each seatbelt receiver 25 is of the type which comprises a retracting mechanism 28 which  
15 retracts a carrier cable 29 on which the seatbelt receiver 25 is carried in the event of the vehicle 1 being subjected to an impact. Such retracting mechanisms 28 and their operation will be well known to those skilled in the art. The retracting mechanisms 28  
20 are provided for urging the corresponding seat belt, and in turn an occupant into the seat in the event of an impact for preventing injury to the occupant of the seat from an air bag. A housing 30 of each seatbelt receiver 25 is secured to the corresponding anchor  
25 bracket 26 by a screw 32 through the housing 30 and the anchor bracket 26.

An impact monitoring means which in this embodiment of the invention is provided by an inertia switch (not shown) for monitoring for an impact is located on the central tunnel 27, and the retracting mechanism 28 is responsive to the inertia switch, so that in the event of the vehicle being involved in an accident, on the impact of the accident, the retracting mechanism 28 is operated in response to the inertia switch for retracting the seatbelt receiver 25.

To mount the extension floor 7 in the vehicle 1 the following procedure is adopted. The driver and passenger seats 5 and 6 together with their conventional mounting arrangements, namely, slidable runners, etc. are removed from the vehicle 1, thus, exposing the floor 11 of the vehicle 1 in the drivers area 3 and the passenger area 4. The floor supporting framework 8 with the seat carriers 19 slidably mounted by the telescoping rails 20 on the floor supporting framework 8, and with the anchor brackets 28 also secured on the floor supporting framework 8 is located in the vehicle 1 so that the rear portion 10 of the floor supporting framework 8 extends across the vehicle to the rear of the drivers area 3 and passenger area 4, and the front portions 12 are located in the drivers area 3 and the passenger area 4. The floor engaging supports 15 are located on the seat anchoring locations

16 and secured thereto. The seatbelt receivers 25 are secured to the floor supporting framework 8 by securing the housing 30 of the seatbelt receivers 25 to the anchor brackets 26 by the screws 32. The inertia  
5 switch (not shown) is secured to the central tunnel 27 and electrically connected to the retracting mechanism 28. This procedure will be known to those skilled in the art. The driver and passenger seats 5 and 6 are then secured to the seat carriers 19, and the floor  
10 panel 9 is secured to the floor supporting framework 8 by suitable fastening means, for example, self-tamper screws, pop rivets or the like. As can be seen pairs of spaced slots 33 are provided in the floor panel 9 for accommodating the frames 34 of the driver and  
15 passenger seats 5 and 6.

The advantages of the invention are many. A particularly important advantage achieved by the invention is that as well as extending the goods carrying floor space of the vehicle, additional safety  
20 for both the driver and passenger is provided. By virtue of the fact that the anchoring means for anchoring the seatbelt receiver is secured to the floor supporting framework, the seatbelt receiver is securely anchored to the vehicle, and there is little danger of  
25 an occupant of either the driver or passenger seats being catapulted through the front windscreen or

- otherwis of the vehicle in the event of an accident. This is a particular advantage over known methods for anchoring seatbelt receivers, which, in general, are anchored to the seat. In such cases, should the seat  
5 come adrift as a result of an impact, the seat and passenger may be catapulted through the front windscreen or otherwise of the vehicle, in the event of an accident. Since by virtue of the fact that the floor supporting framework is securely mounted to the  
10 floor of the vehicle 1 there is little danger of the floor supporting framework coming adrift from the vehicle, and thus, no danger of the anchoring means and seatbelt receivers coming adrift in the event of an impact.
- 15 The invention is not limited to the embodiment hereinbefore described which may be varied in construction and detail.

CLAIMS

1. A method for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the vehicle, the method comprising the steps of removing the drivers seat from the drivers area, locating a floor supporting framework in the drivers area for supporting an extension floor extending from the goods carrying floor, providing a mounting means on the floor supporting framework for securing the drivers seat to the floor supporting framework, providing an anchoring means on the floor supporting framework for anchoring a seatbelt receiver to the floor supporting framework for the drivers seat seatbelt, and placing an extension floor panel on the floor supporting framework to form the extension floor.
2. A method as claimed in Claim 1 in which the floor supporting framework is located in both the drivers area and a front passenger area, and both the drivers seats and the front passenger seat are removed prior to locating the floor supporting framework in the vehicle.
3. A method as claimed in Claim 2 in which an anchoring means is provided on the floor supporting framework for anchoring each seatbelt receiver to the floor supporting framework.

4. A method as claimed in any preceding claim in which each anchoring means is located on the floor supporting framework adjacent a side of the corresponding seat which is adjacent the central tunnel of the vehicle.

5. A method as claimed in any preceding claim in which each anchoring means comprises an anchoring bracket mounted on the floor supporting framework.

6. A method as claimed in any preceding claim in which each anchoring means carries the seatbelt receiver on a carrier cable, and a retracting mechanism is provided for retracting the carrier cable and the seatbelt receiver for in turn returning an individual sitting in the corresponding seat to the seat.

7. A method as claimed in Claim 6 in which an impact monitoring means is mounted in the vehicle, and the retracting mechanism of the seatbelt receiver is responsive to the monitoring means for retracting the carrier cable and the seatbelt receiver in the event of an accident.

8. A method as claimed in Claim 7 in which the impact monitoring means is mounted on the central tunnel of

the vehicle.

9. A method as claimed in Claim 7 or 8 in which the impact monitoring means is an inertia switch.

10. A method as claimed in any preceding claim in which a floor engaging support means extends downwardly from the floor supporting framework for securing the floor supporting framework to a corresponding anchoring location on the floor of the vehicle, the anchoring locations being provided for anchoring the corresponding seat to the floor of the vehicle.

11. A method as claimed in any preceding claim in which each mounting means is provided by a seat carrier for slidably carrying and supporting the corresponding seat on the floor supporting framework for facilitating forward and rearward adjustment of the position of the corresponding seat.

12. A method as claimed in Claim 11 in which the seat carrier is slidably carried on a pair of spaced apart telescoping rails.

13. A method for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the

vehicle, the method being substantially as described herein with reference to and as illustrated in the accompanying drawings.

14. A floor supporting framework for supporting an extension floor for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the vehicle, the floor supporting framework comprising a mounting means for securing the drivers seat to the floor supporting framework, and an anchoring means for anchoring a seatbelt receiver to the floor supporting framework for the drivers seat seatbelt.

15. A floor supporting framework as claimed in Claim 14 in which the floor supporting framework is adapted for extending into the drivers area and a front passenger area of the vehicle, and a pair of mounting means are provided on the floor supporting framework for mounting the drivers seat and the front passenger seat thereon.

16. A floor supporting framework as claimed in Claim 15 in which a pair of anchoring means are provided for anchoring the seat belt receivers of the respective seat belts of the drivers and front passenger seats to the floor supporting framework.



17. A floor supporting framework as claimed in any of Claims 14 to 16 in which the anchoring means comprises a means for carrying a carrier cable which carries the seatbelt receiver, the carrier cable being connected to  
5 a retracting mechanism for retracting the carrier cable and in turn the seatbelt receiver for returning an individual in the seat into the seat.
18. A floor supporting framework as claimed in Claim 17 in which the retracting mechanism is responsive to  
10 an impact monitoring means located in the vehicle for causing the retracting mechanism to retract the seatbelt receiver on an impact.
19. A floor supporting framework as claimed in Claim 18 in which the impact monitoring means is provided by  
15 an inertia switch, and the inertia switch is mounted on the central tunnel of the vehicle.
20. A floor supporting framework as claimed in any of Claims 14 to 19 in which each anchoring means is  
20 mounted on the floor supporting framework at a location adjacent a side of the corresponding seat, which in use is adjacent the central tunnel of the vehicle.
21. A floor supporting framework as claimed in any of Claims 14 to 20 in which a floor engaging support means

extends downwardly from the floor supporting fram work  
for engaging and securing the floor supporting  
framework to a corresponding anchoring location on the  
floor of the vehicle which is provided for anchoring a  
5 corresponding seat to the vehicle floor.

22. A floor supporting framework as claimed in any of  
Claims 14 to 21 in which each mounting means for  
mounting the corresponding seat to the floor supporting  
framework slidably mounts the corresponding seat to the  
10 floor supporting framework for facilitating forward and  
rearward adjustment of the position of the  
corresponding seat.

23. A floor supporting framework as claimed in any of  
Claims 14 to 22 in which each mounting means comprises  
15 a seat carrier which is slidably carried on the floor  
supporting framework.

24. A floor supporting framework as claimed in Claim  
23 in which each seat carrier is slidably carried on  
the floor supporting framework by a pair of spaced  
20 apart telescoping rails.

25. A floor supporting framework as claimed in any of  
Claims 14 to 24 in which the extension floor is mounted  
on the floor supporting framework.

26. A floor supporting framework for supporting an extension floor for extending the goods carrying floor space of a vehicle, for example, a jeep, an estate vehicle or a van into at least the drivers area of the vehicle, the floor supporting framework being  
5 substantially as described herein with reference to and as illustrated in the accompanying drawing.

27. A vehicle, for example, a jeep, an estate vehicle or a van in which the goods carrying floor space of the vehicle is extended into at least the drivers area of  
10 the vehicle by the method as claimed in any of Claims 1 to 13.

28. A vehicle as claimed in Claim 27 in which the goods carrying floor space of the vehicle is extended  
15 using a floor supporting framework as claimed in any of Claims 14 to 26.



Application No: GB 9804912.5 Examiner: Karl Whitfield  
Claims searched: 1 to 12, 14 to 25, 27 & 28 Date of search: 27 July 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): B7B (BEA, BHC, BHE, BHH, BHL, BHX, BWL)

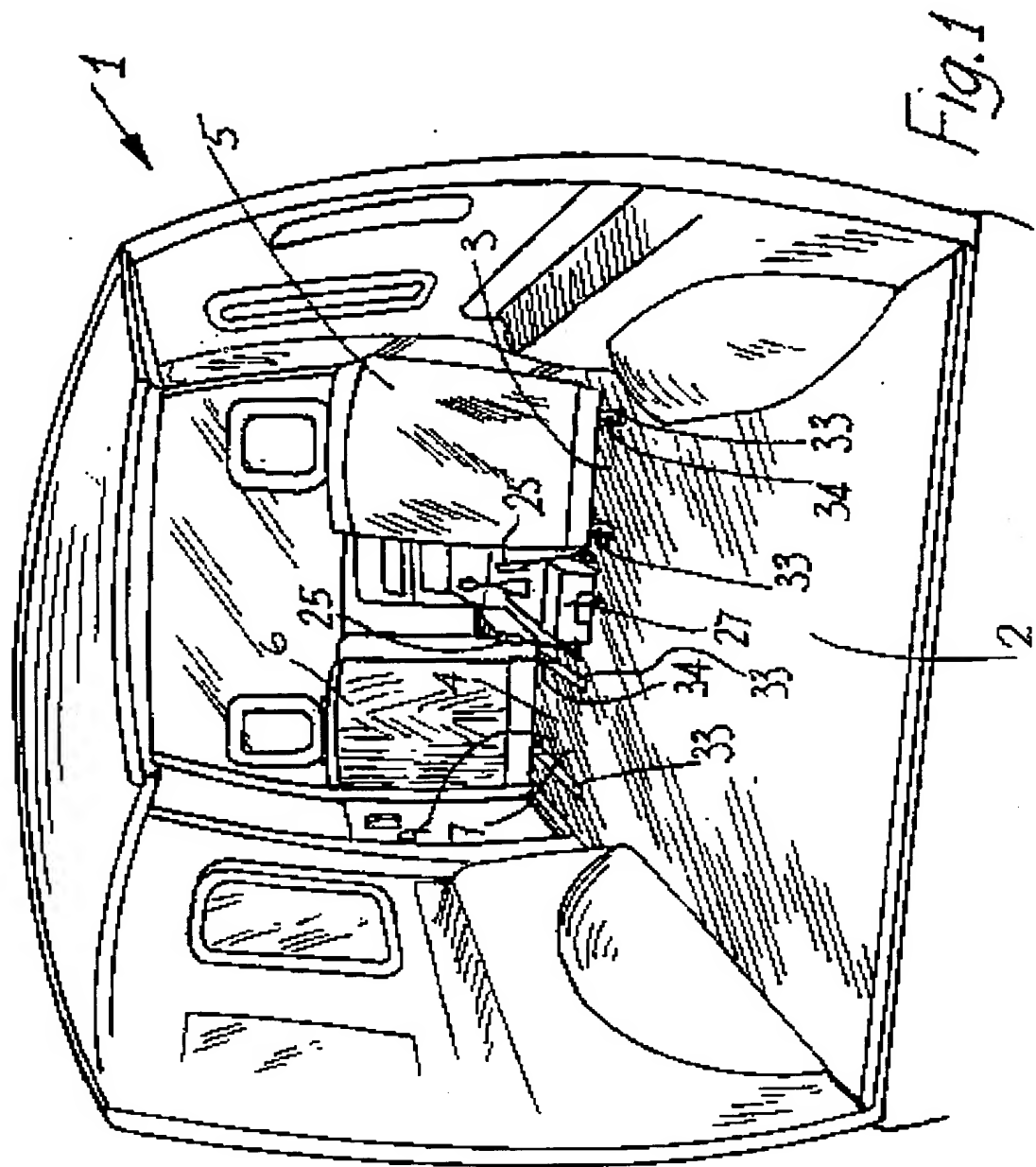
Int CI (Ed.6): B60N 2/00, 2/24, B60P 1/00, 1/64, 9/00, B62D 25/20, 33/04, 33/06,  
47/00

Other: Online database: Derwent World Patents Index accessed via Questel

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	US 4941702 (SOUTHWARD)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



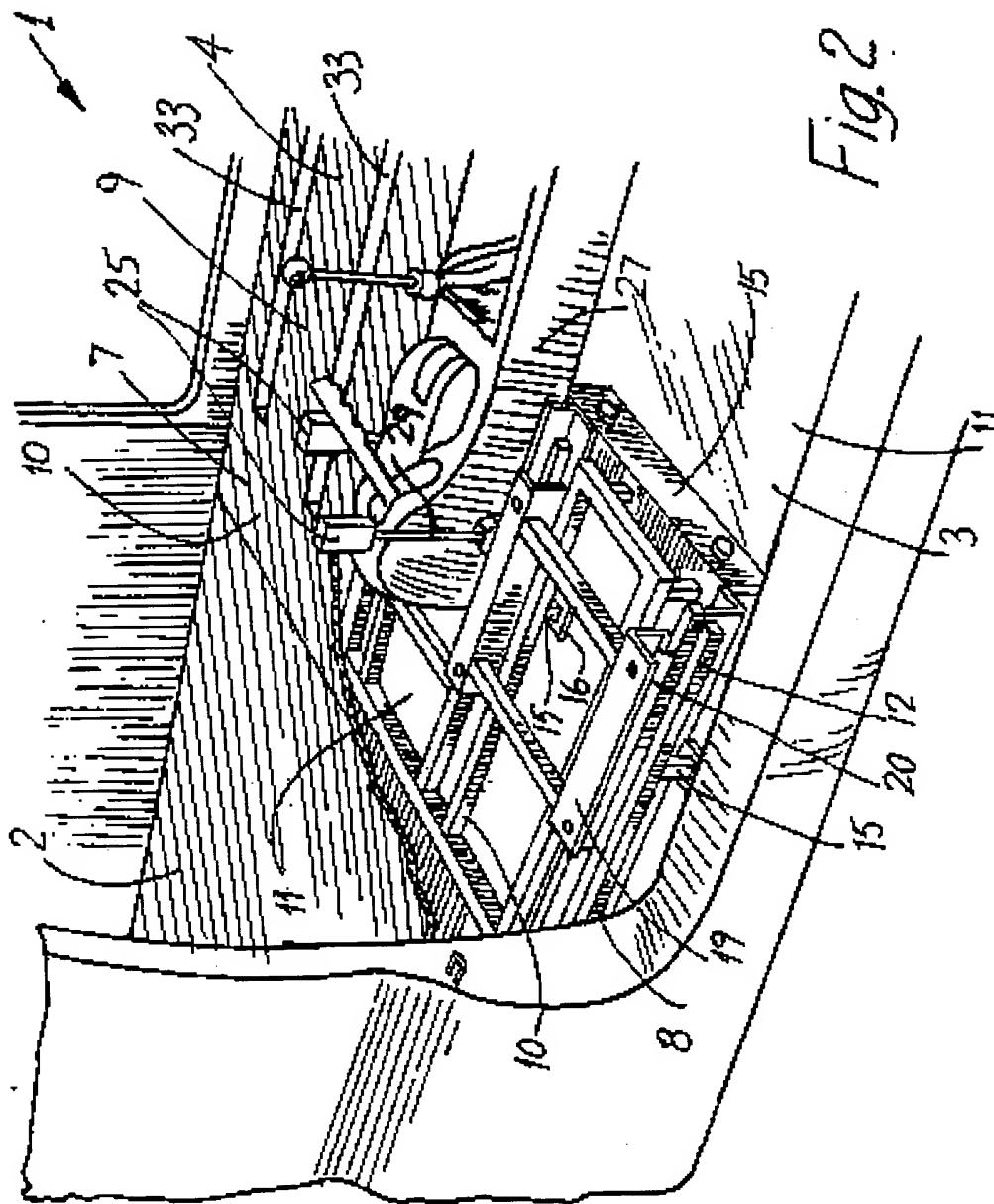


Fig. 2

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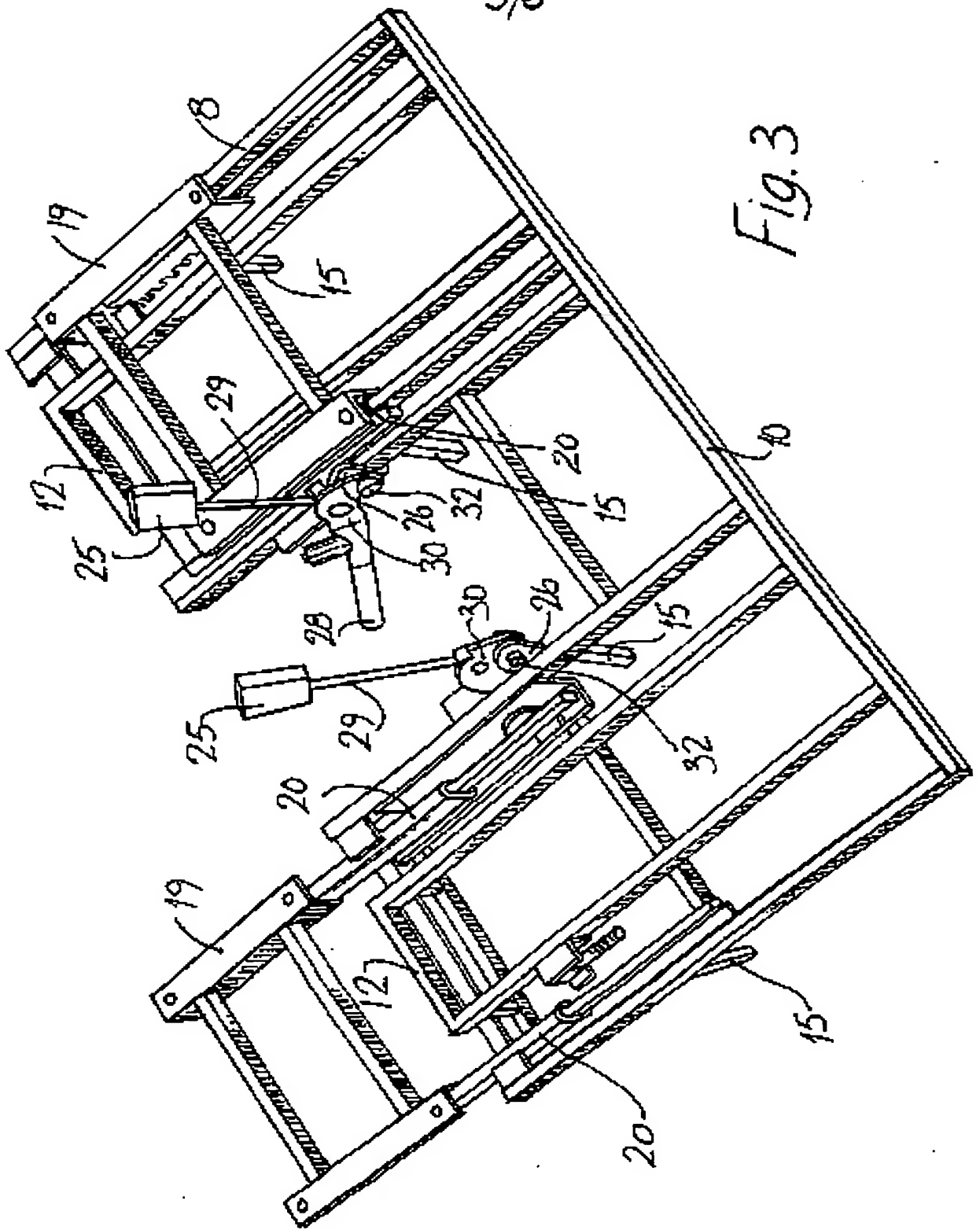


Fig. 3

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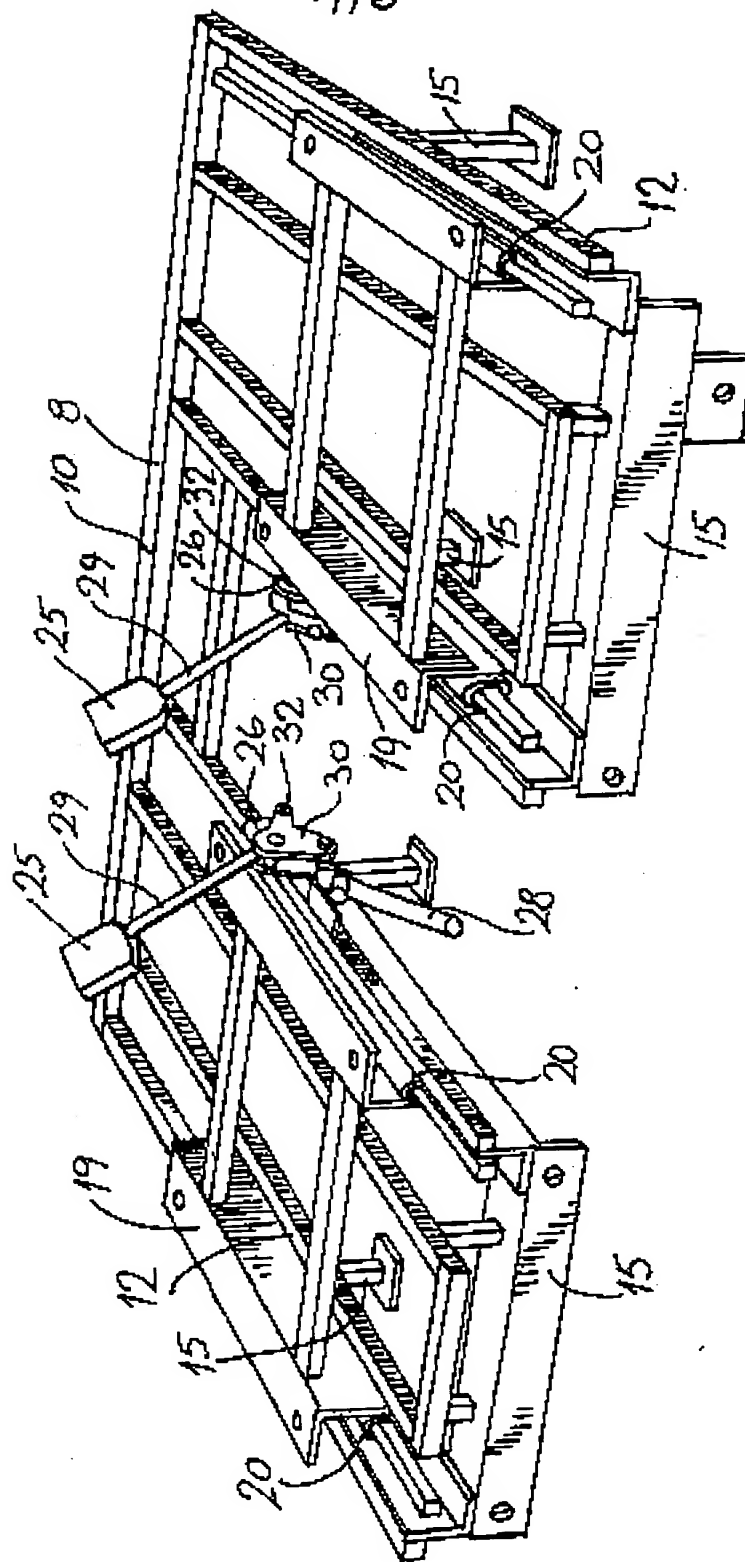
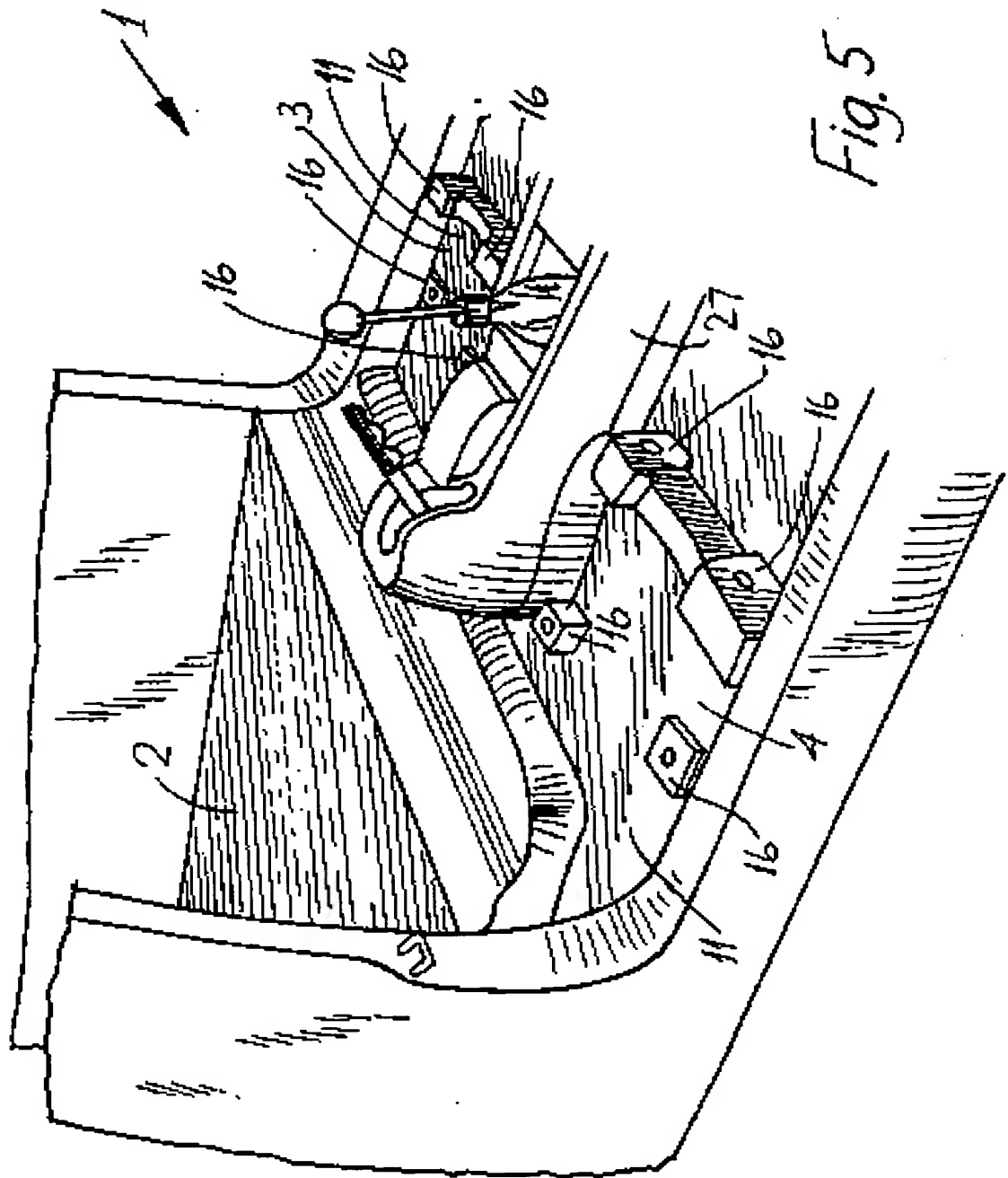


Fig.4





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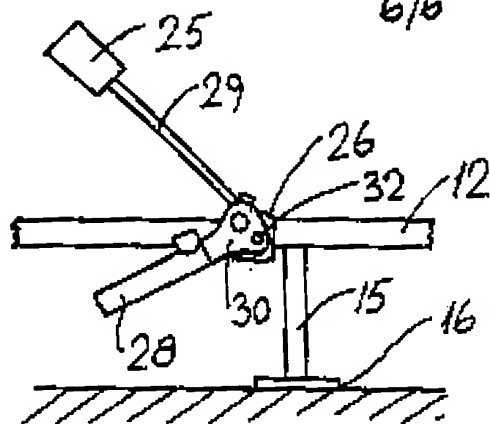


Fig. 7

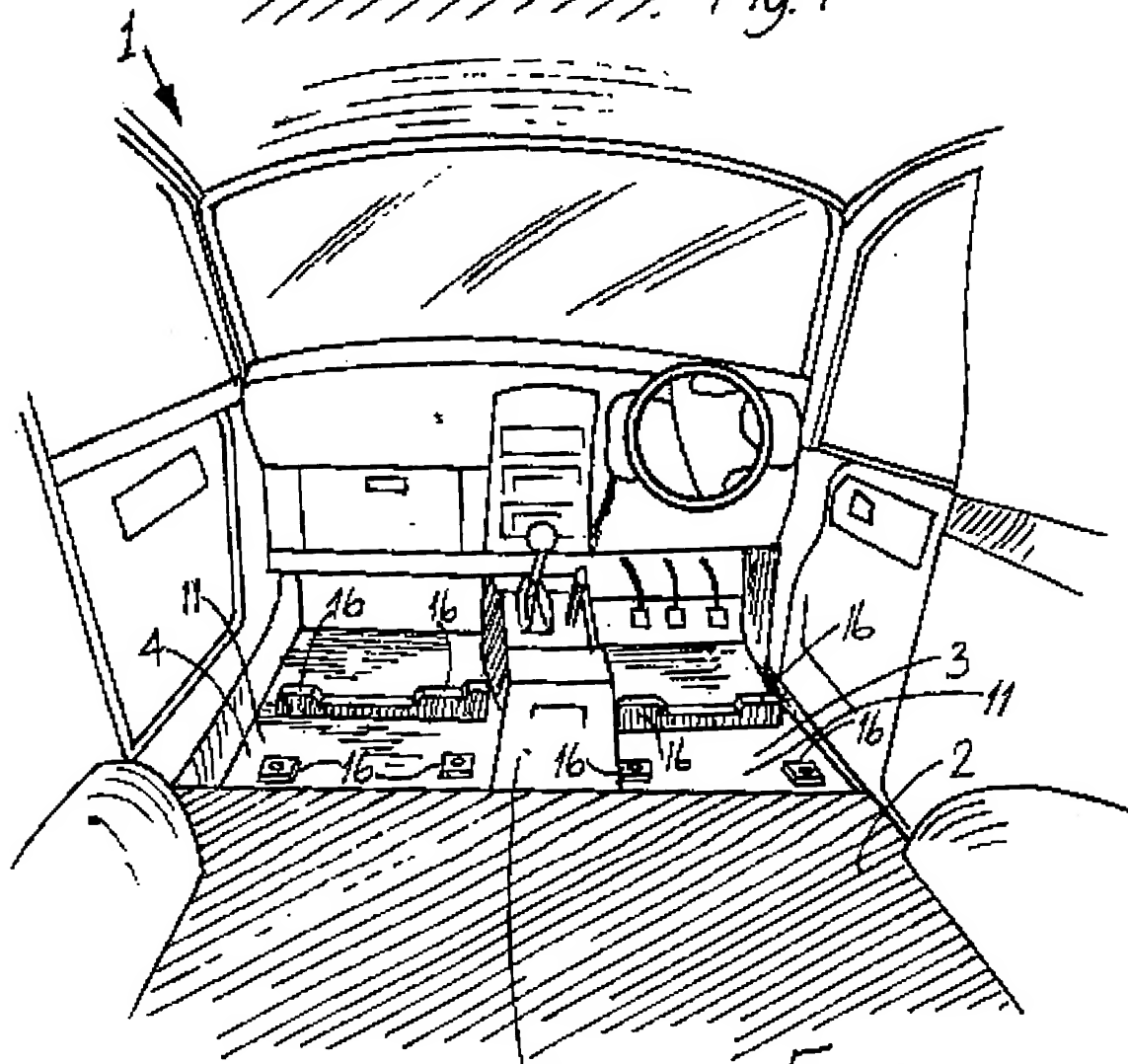


Fig. 6